

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (original) A resist lift-off process comprising:  
  
    covering at least a portion of a substrate surface with a photoresist;  
  
    depositing a dielectric layer on said substrate surface and said photoresist resulting in a sidewall dielectric layer being formed on a side of said photoresist; and  
  
    applying megasonic energy to said substrate surface via a thin meniscus of lift-off fluid to crack said sidewall dielectric layer.
2. (original) The lift-off process of claim 1 further comprising adding a surfactant to said lift-off fluid to enhance wetting of said photoresist and said dielectric layer.
3. (original) The lift-off process of claim 2 further comprising ultrasonically treating said substrate surface subsequent to applying said megasonic energy.
4. (original) The lift-off process of claim 3 further comprising applying said megasonic energy a second time.
5. (original) The lift-off process of claim 1 further comprising formulating said lift-off fluid to chemically react with said photoresist to initiate lift-off of the photoresist.

6. (original) The lift-off process of claim 1 further comprising formulating said lift-off fluid to create repulsive Van der Waals forces between said photoresist and said substrate surface to effect separation therebetween.

7. (original) The lift-off process of claim 6 further comprising controlling said repulsive Van der Waals forces by controlling a pH of said lift-off fluid.

8. (original) The lift-off process of claim 7 further comprising formulating the lift-off fluid to oxidize said photoresist.

9. (original) The lift-off process of claim 1 further comprising:

a metal feature provided intermediate said substrate surface and said photoresist; and  
formulating said lift-off fluid to create repulsive Van der Waals forces between said photoresist and said metal feature.

10. (original) The lift-off process of claim 1 further comprising reducing a thickness of said sidewall dielectric layer prior to applying said megasonic energy.

11. (original) The lift-off process of claim 10 wherein said reducing a thickness of said sidewall dielectric layer further comprises performing low angle ion milling.

12. (original) The lift-process of claim 1 wherein said applying megasonic energy further comprises pulsing said megasonic energy on and off.

13-15 (cancelled)

16. (original) A resist lift-off process comprising:

covering at least a portion of a substrate surface with a photoresist;

depositing a dielectric layer on said substrate surface and said photoresist;

applying acoustic energy to said substrate surface via a lift-off fluid to facilitate lift-off of said photoresist; and

formulating said lift-off fluid to create repulsive Van der Waals forces between said photoresist and said substrate surface to effect separation therebetween.

17. (original) The lift-off process of claim 16 further comprising controlling said repulsive Van der Waals forces by controlling a pH of said lift-off fluid.

18. (original) The lift-off process of claim 17 wherein controlling said pH further comprises adding at least one of a base and a buffer solution to said lift-off fluid.

19. (original) The lift-off process of claim 16 further comprising formulating said lift-off fluid to chemically react with said photoresist to initiate lift-off of the photoresist.

20. (original) The lift-off process of claim 19 further comprising formulating the lift-off fluid to oxidize said photoresist.

21. (original) The lift-off process of claim 16 further comprising adding a surfactant to said lift-off fluid to enhance wetting of said photoresist and said dielectric layer.

22. (original) The lift-off process of claim 16 wherein applying said acoustic energy further comprises applying megasonic energy.

23. (original) The lift-off process of claim 22 further comprising ultrasonically treating said substrate surface subsequent to applying said megasonic energy.

24. (original) The lift-off process of claim 23 further comprising applying said ultrasonic energy a second time.

25. (original) The lift-off process of claim 16 further comprising:

providing a metal feature intermediate said substrate surface and said photoresist; and  
formulating said lift-off fluid to create repulsive Van der Waals forces between said photoresist and said metal feature.

26. (original) The lift-off process of claim 16 wherein said applying acoustic energy further comprises applying megasonic energy.

27. (original) The lift-off process of claim 26 wherein:

said applying acoustic energy further comprises applying megasonic energy; and

said applying ultrasonic energy a second time further comprises applying megasonic energy a second time.